APPENDIX

D-1

Highways / Arterials

TABLE OF CONTENTS

HIGHWAYS & ARTERIALS

1. Transportation Setting

The Metropolitan Transportation System (MTS), which consists of existing multi-modal facilities having regional and national significance, is the backbone of our regional transportation system. The MTS can be broadly categorized into three networks: roadway, transit, and goods movement. The MTS roadways include freeways, regionally significant state highways and arterials, as well as those in currently approved congestion management plans. The MTS transit component includes the commuter rail network, the inter-city rail system, and the urban rail system, including light & heavy rail lines. The goods movement component of the MTS includes rail freight corridors and major truck routes using the freeways and regionally significant state highways and arterials. The primary purpose of the MTS is to distinguish the locally important facilities from those strategically significant at the regional and national level. There is a federal requirement to develop long-range plans that emphasize facilities serving regional and national functions. Such differentiation clarifies the issues so that the concepts can be directly applied to planning and policy issues having inter-county, interstate, and international implications.

In addition to the components identified under the MTS network, our regional transportation system includes minor arterials and major collectors in the roadway category, fixed route transit and other para-transit systems in the transit category, airports, seaports, and a non-motorized transportation network that includes bikeways and pedestrian walkways

Regional and local roads are an integral part of the region's infrastructure. The vast majority of trips rely on the highway network, either for automobiles, buses, vanpools, trucks, or in many cases even bicycles. In fact, 99 percent of all trips, including trips on buses, occur on the highway and arterial network. The regional and local highway system faces mounting congestion, which affects personal mobility, freight movement and air quality. The preservation, management and selective expansion of this system are crucial to the region's economic vitality and the quality of life for the region's residents.

Existing System

In the current roadway system, there are over 9,000 lane miles of freeway and High-Occupancy Vehicle (HOV) lanes linking the region. Additionally, there are over 40,000 lane miles of major and minor arterials. These roadways are an integral part of the transportation system, often acting as alternative routes to freeway driving. Table D-1.1 summarizes the key components of the region's Highway and Arterial Network.

Table D-1.1

Highway and Arterial Network
(Lane Miles)

Facility	2000
Freeway	8,669
Principal Arterial	15,573
Minor Arterial	18,705
Major Collectors	8,217
HOV	664

Currently, there are approximately 664 lane miles of completed HOV system in the region. Most of the HOV system is open to vehicles with two or more occupants only over the 24-hour day. The exceptions are the HOV lanes on I-10 (El Monte Busway), which requires a vehicle occupancy of three or more persons during peak periods.

In recent years a number of toll roads have been added to the transportation system mix. These toll roads are considered freeway and HOV lanes for evaluation purposes. All of these new toll roads are privately funded.

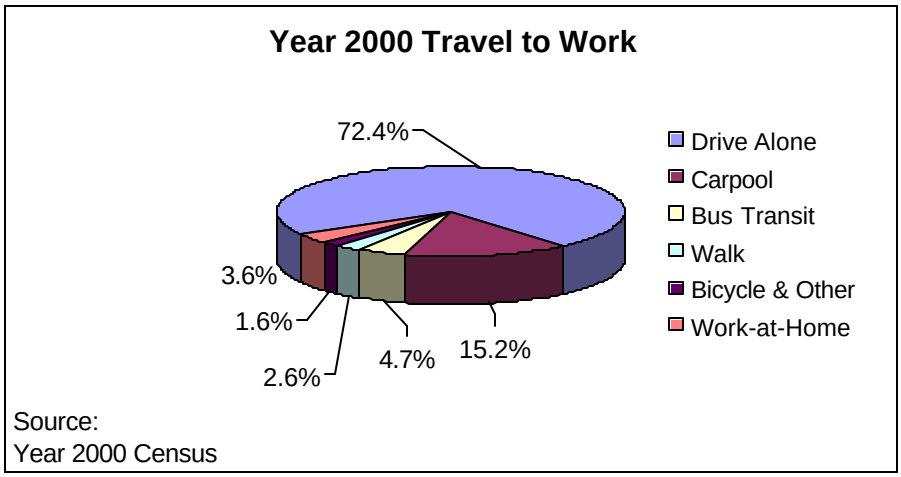
The following toll roads are new additions to the regional transportation system:

- SR 91 Express Lanes, Orange County

- SR 73 San Joaquin Hills Transportation Corridor, Orange County
- SR 241/261/133 Foothill/Eastern Transportation Corridor, Orange County

The mode of travel to work in the year 2000 was predominantly drive alone as shown in Figure D-1.1. Census data shows that over 70 percent of the workers in the SCAG region drive a car alone to work. With an additional 3.6 percent of workers carpooling, then over three-quarters of the working population commute to work utilizing the roadway system. This is a primary reason for the existing congestion delay identified in Exhibit D-1.1.

Figure D-1.1



Both HOV lanes and transit will play an important role in the future of the regional transportation system, but both of these critical elements face continuing challenges. Although lane miles for HOV will continue to increase (by over 80 percent), the percentage of people who rideshare to work appears to fluctuate between 14 and 16 percent from 1990 through 1998 (See Figure D-1.2).

While the HOV lanes are utilized at 60 to 95 percent of capacity during peak periods, they are primarily being used by two-person cars, with some three-person vehicles and even less in larger vehicles. Given the significant financial investment planned for HOV projects, it is important to assure that there is maximum use of HOV lanes by carpools and by vans and buses that can efficiently and effectively move larger numbers of people. This signifies the need to coordinate Transportation Demand Management (TDM) strategies to ensure maximum utilization of our HOV system.

Figure D-1.2

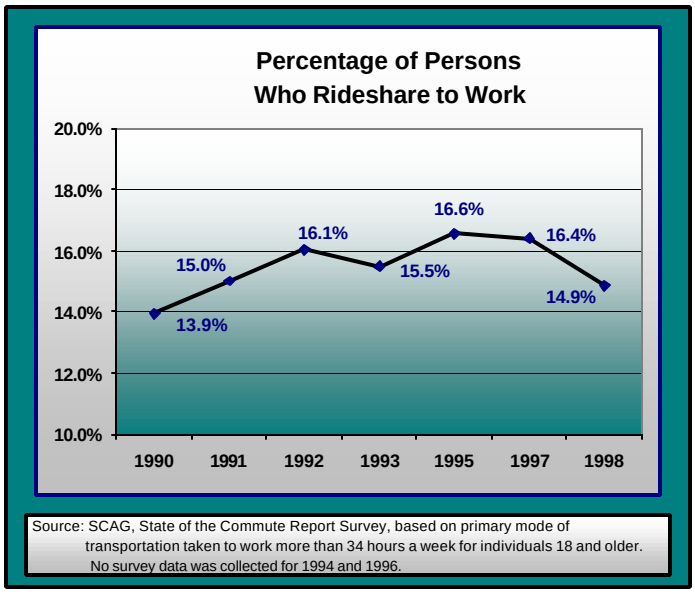
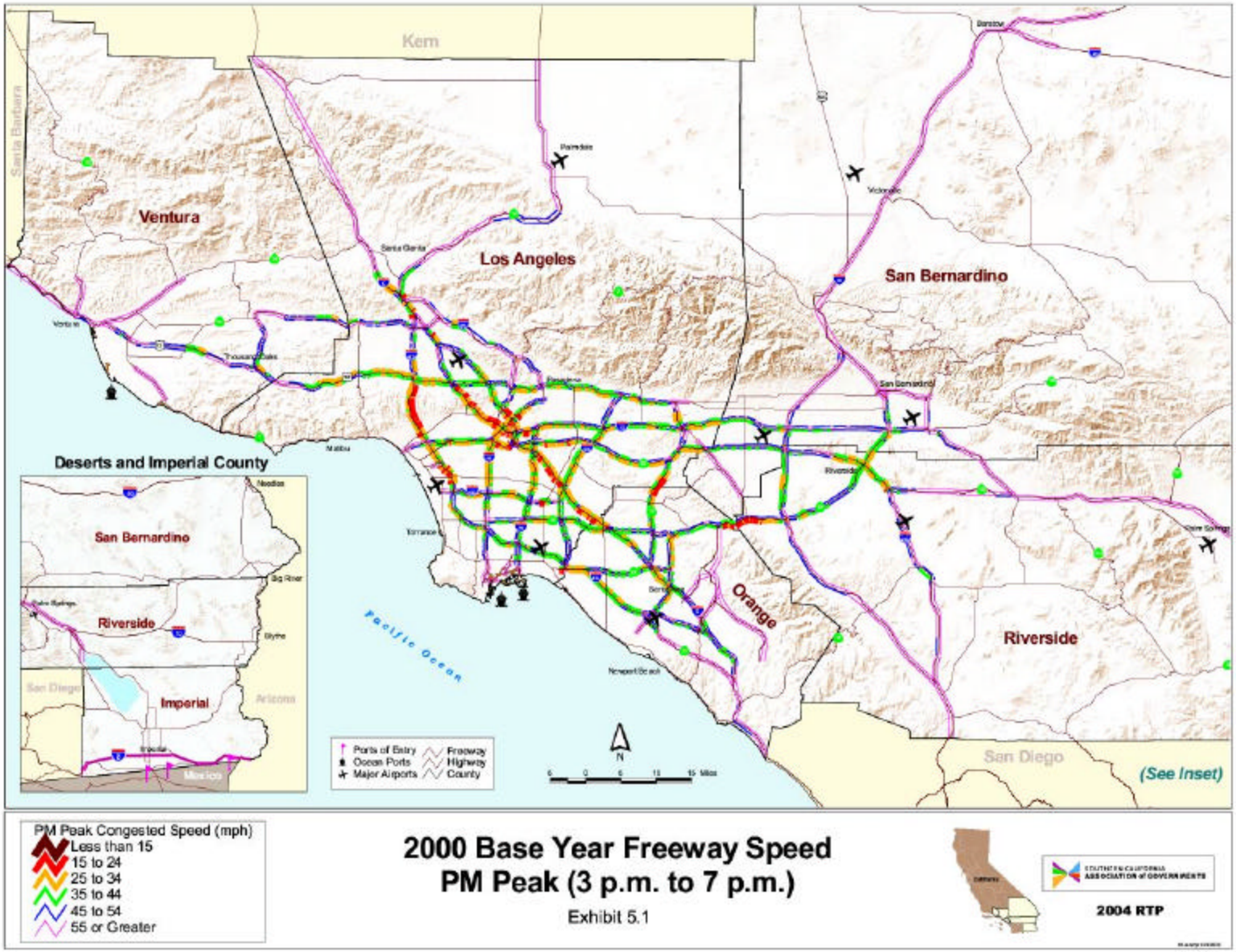


Exhibit D-1.1: 2000 Base Year Freeway Speed



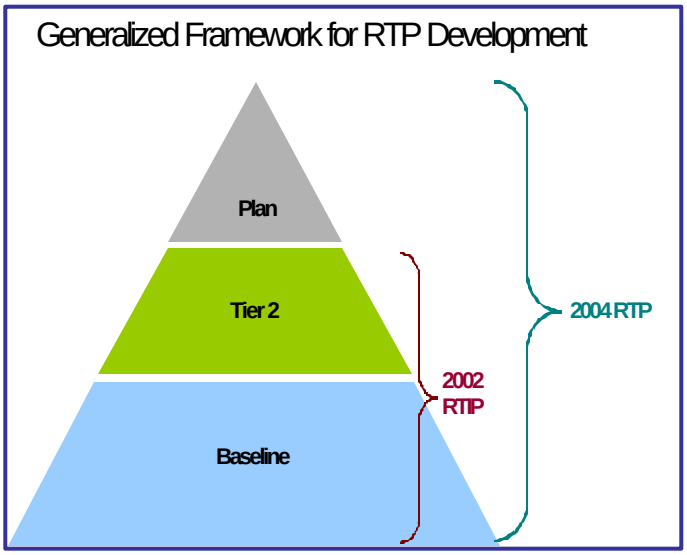
Investment in the highway system has varied in the past fifty years. The 1950s and '60s were a period of major highway investment, as much of the freeway system was completed during these two decades. In the 1970s, due in large part to economic and environmental restraints, the emphasis shifted from building new highways to widening existing ones. The 80s and 90s have seen another shift towards building High-Occupancy Vehicle (HOV) lanes, rail facilities, and privately-funded toll roads. As the new millennium begins, the SCAG region continues its efforts to maintain existing infrastructure, add improvements where they will provide the most benefit, and utilize existing capacity more efficiently and effectively.

RTP Framework

The structure of proposed projects and strategies that constitute the 2004 RTP is depicted in Figure D-1.3. The plan can be viewed as multiple layers, or tiers, of transportation projects and strategies, beginning first with the existing transportation system and ending with the proposed Plan improvements. While the RTP includes all of these tiers, it is useful to examine them independently for analysis purposes. These tiers are described as follows:

- *Baseline represents a future scenario in which only projects in the 2002 Regional Transportation Improvement Program (RTIP) that have state and Federal environmental clearance by December 2002 are assumed to be completed. The Baseline also assumes a future in which there are no changes in land use from established general plans. The Baseline functions as the "No Project" alternative used in the RTP Program Environmental Impact Report and provides a useful reference point, as it represents a future without the proposed RTP.*

Figure D-1.3 – RTP Projects and Strategies Structure



Tier 2 describes the remaining projects in the 2002 RTIP that are not included in the Baseline scenario, plus additional non-RTIP projects committed through other programming or budget documents. Tier 2 projects are recognized as committed projects and the RTP gives them first funding priority after the Baseline. The full listing of Tier 2 projects is contained in the Technical Appendix.

- *Plan represents the final layer of transportation improvements, above and beyond Tier 2. These projects and strategies represent the focus of the RTP, and are discussed in detail later in this section.*

From the long-range planning standpoint, Baseline and Tier 2 projects are considered as fully committed. The real discretion that the RTP process has is over the projects and strategies beyond Tier 2, that is represented by the small triangle on top of the pyramid. The full listing of projects for Baseline, Tier 2 and Plan are located in Appendix I.

Baseline System

Table D-1.2 summarizes the increase in highway network miles that the region is committed to funding and building in our baseline investments between 2000 and 2030. The regionally significant baseline HOV and mixed-flow improvement projects are shown in Exhibit D-1.2 and D-1.3.

Exhibit D-1.2: 2030 High Occupancy Vehicle (HOV) Lane

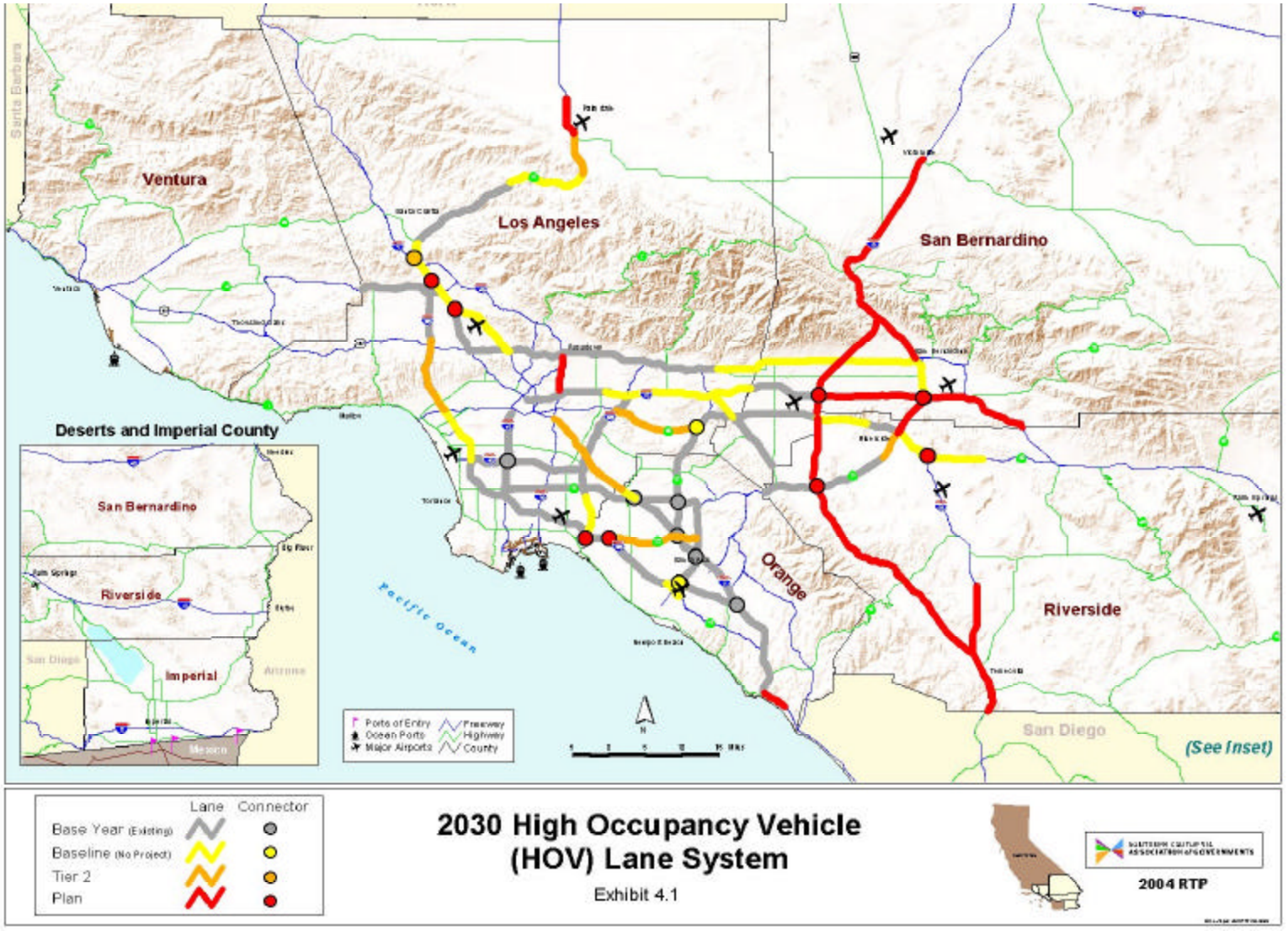


Exhibit D-1.3: 2030 Mixed Flow Improvements

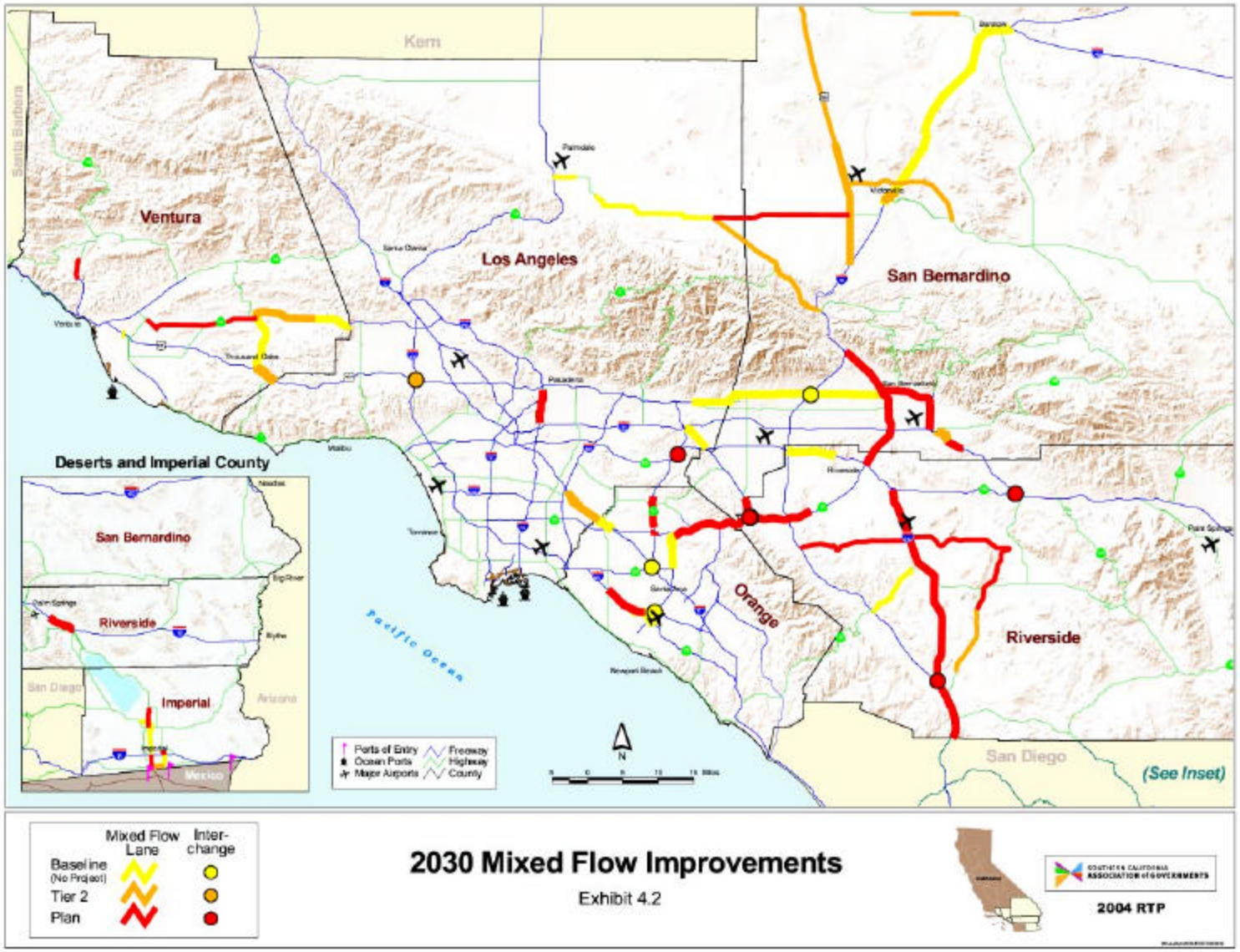


Table D-1.2

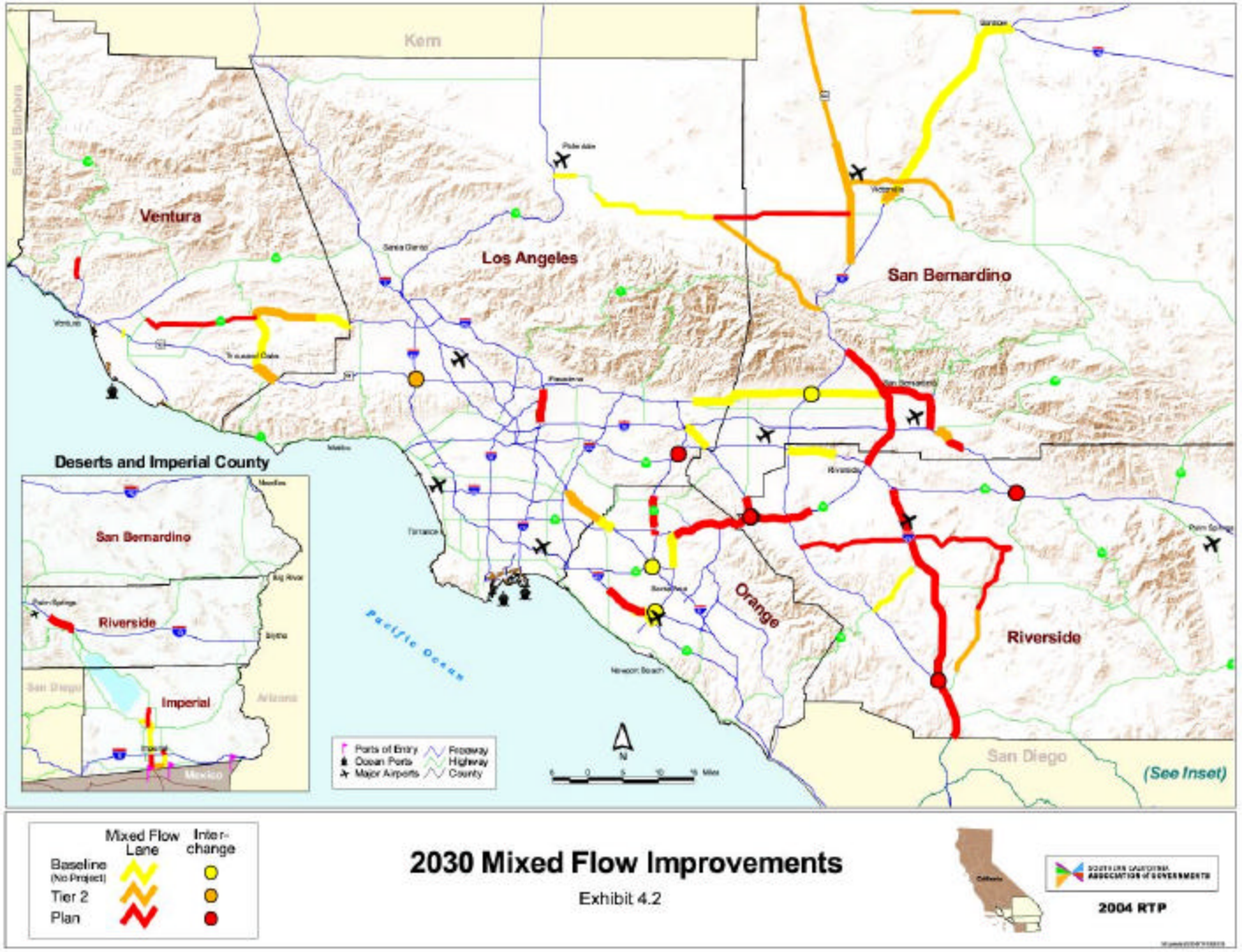
Baseline Highway Improvements (Lane/Route Miles)			
Facility Types	***Year 2000***	***2030 Baseline***	**Percent Increase**
Freeway	8,669	9,026	4.0%
Principal Arterial	15,573	15,959	2.4%
Minor Arterial	18,705	18,989	1.5%
Major Collectors	8,217	8,401	2.2%
HOV	443	931	3.1%

Freeway mixed-flow lanes and HOV lanes will increase the most substantially. There is a noted increase up to 2.4 percent in local arterials with Baseline improvements. However, these increases in facilities will not keep pace with the expected 40 percent population growth. If the region was to do nothing beyond completing committed (Baseline) projects by the year 2030, the freeway network mixed-flow lane capacity would increase by only 4 percent and the arterial system by 2 percent.

The anticipated increase in population growth combined with the minimal increases in transportation facility lane miles shown in Table D.1.2 would result in severe congestion. The congestion delay map (Exhibit D.1.4) show that the future transportation system is expected to be overwhelmed by new demand.

A comparison of the Year 2000 congestion map (Exhibit D.1.1) with the 2030 Baseline congestion map (Exhibit D.1.4) identifies that if we were to do nothing beyond completing committed (Baseline) projects by the year 2030, the Region's freeway network mixed-flow lane capacity would increase by less than 10 percent and the arterial system capacity would increase by about 7 percent. On the other hand, the High Occupancy Vehicle network will more than double in terms of lane miles by 2030. SCAG recognizes that these three types of facilities will continue to provide the means for most travelers to get to their desired destinations.

Exhibit D-1.4: 2030 Base Year Freeway Speed



2. Plan System Development

The Plan System went through several phases of development over the past two and a half years. Many alternatives were considered and evaluated according to performance measures discussed in detail in Appendix C. In all, there was evaluation of 5 RTP scenarios and 20 total variations.

The primary alternatives under evaluation were:

The "No Project" is the future condition with no RTP and minimal improvements to the transportation system. This fulfills the RTP Baseline and CEQA No Project requirements.

The "2001 RTP Modified" is an update of the adopted 2001 RTP to reflect the No Project growth and recent transportation planning decisions.

The "PILUT 1 (Infill)" alternative assumes additional transportation/land use strategies that encourage future growth to concentrate in existing urban centers through infill and redevelopment.

The "PILUT 2 (5th Ring)" alternative assumes additional transportation/land use strategies that encourage future growth to occur in the High Desert areas of northern Los Angeles and San Bernardino County.

The "Growth Vision (Hybrid)" builds upon the lessons learned from PILUT 1 & 2, and assumes transportation/ land use strategies where feasible in all parts of the region that encourage smart growth, jobs/housing balance, and centers-based development.

No Project Scenario

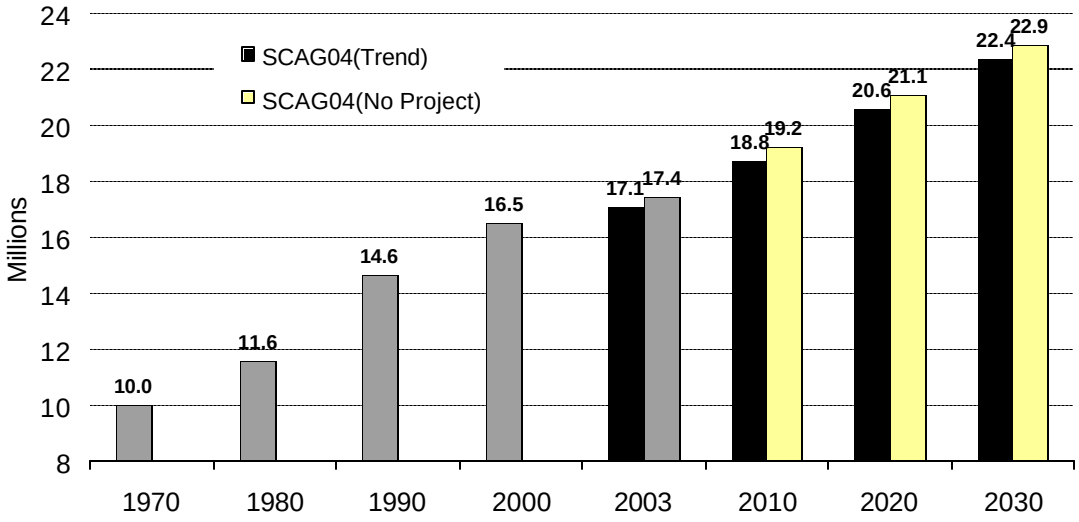
The No Project alternative assumes year 2030 with no RTP and only minimal transportation improvements from completion of certain RTIP projects, only projects from the 2002 RTIP with federal environmental clearance by 2002. Year 2030 Baseline conditions are highly dependent on the population levels, employment availability and household formations. Five specific demographic trends and/or assumptions for year 2030 conditions are enumerated below with details provided in Appendix A.

1. Growth rates decrease each decade.
2. Job growth rates higher than population growth rates through 2010, but slower than population growth rates after 2010.
3. Household growth rates higher than job growth rates and higher than population growth rates from 2000 to 2030.
4. SCAG share of U.S. job growth should be within a reasonable range.
5. Unemployment rate should not be lower than 4.9%.

In addition, the implications of recent growth data for 2003, produced by California's Department of Finance and Employment Development Department, resulted in further evaluation of Baseline 2030 conditions. The CEHD approved adjusting the Trend projection based on this new data, and using the adjusted numbers as the No Project RTP/EIR alternative. The adjustments are graphically presented in Figures D-1.4, D-1.5 and D-1.6 below. They are numerically presented in Table D-1.3.

Figure D-1.4

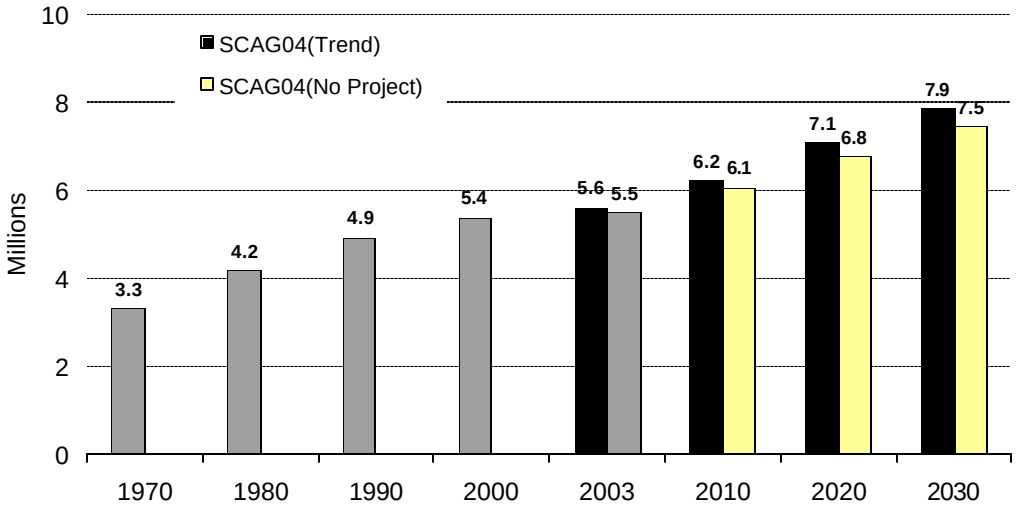
No Project Population Projection 1970-2030: SCAG Region



Note: US Census for 1970, 1980, 1990, 2000. CA DOF Estimates from 2003, SCAG Trend and Revised Projection for 2010, 2020, 2030

Figure D-1.5

No Project Household Projection 1970-2030: SCAG Region



Note: US Census for 1970, 1980, 1990, 2000. CA DOF Estimates from 2003, SCAG Trend and Revised Projection for 2010, 2020, 2030

Figure D-1.6

No Project Employment Projection 1983 to 2030: SCAG Region

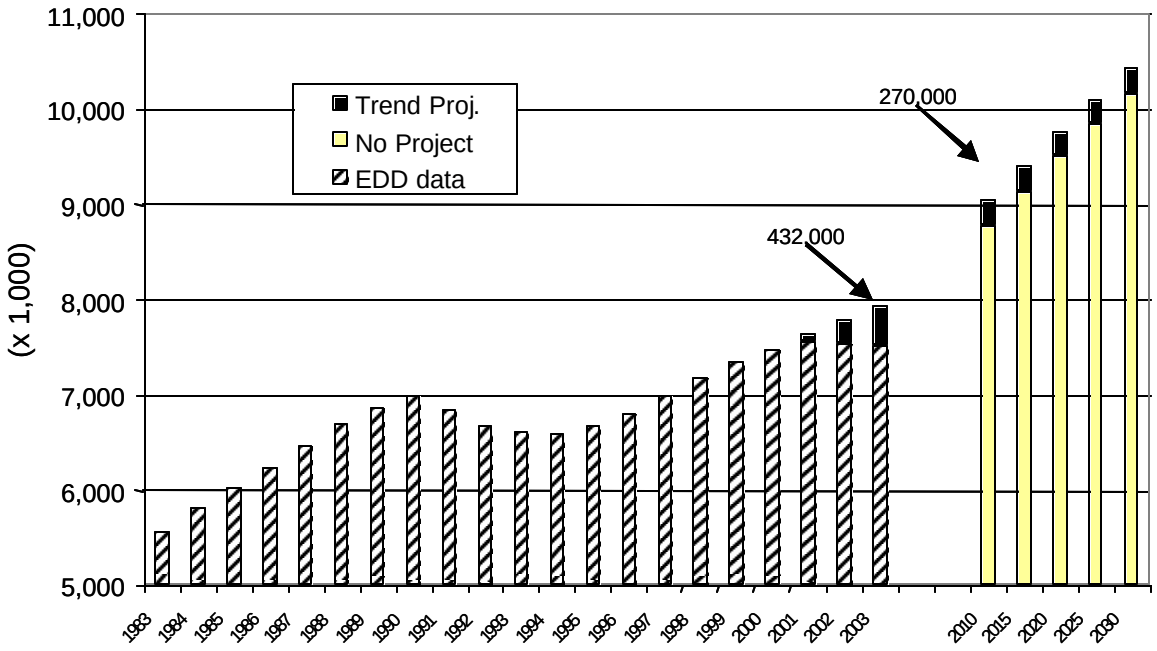


Table D-1.3
No Project versus Trend (in thousands)

	Trend		No Project		Difference (No Project minus Trend)	
	2010	2030	2010	2030	2010	2030
Population	18,759	22,410	19,236	22,890	480	480
Households	6,243	7,869	6,073	7,476	-170	-390
Employment	9,047	10,434	8,778	10,168	-270	-270

The adjustments, based on the recent growth data for 2003 and approved by CEHD, were then made to Baseline data to develop the No Project RTP/EIR alternative. The adjusted county specific data for population is provided in Table D-1.4. Adjusted household projections and employment projections are detailed in Table D-1.5 and Table D-1.6, respectively.

Table D-1.4
No Project Population Projections (in thousands)

County	2000	2005	2010	2015	2020	2025	2030
Imperial	147	165	189	210	231	251	270
Los Angeles	9,580	10,263	10,722	11,137	11,547	11,939	12,316
Orange	2,867	3,103	3,306	3,370	3,434	3,494	3,553
Riverside	1,560	1,850	2,085	2,335	2,582	2,819	3,045
San Bernardino	1,718	1,919	2,059	2,230	2,398	2,559	2,713
Ventura	758	823	874	905	936	965	993
SCAG Region	**16,630**	**18,124**	**19,236**	**20,188**	**21,127**	**22,027**	**22,890**

Table D-1.5
No Project Household Projections (in thousands)

County	2000	2005	2010	2015	2020	2025	2030
Imperial	39	45	55	62	69	77	84
Los Angeles	3,137	3,235	3,404	3,574	3,745	3,914	4,079
Orange	940	979	1,029	1,046	1,064	1,081	1,098
Riverside	509	587	686	776	867	957	1,045
San Bernardino	531	567	619	675	732	788	842
Ventura	244	261	280	293	305	317	329
SCAG Region	**5,401**	**5,674**	**6,073**	**6,427**	**6,782**	**7,133**	**7,476**

Table D-1.6
No Project Employment Projections (in thousands)

County	2000	2005	2010	2015	2020	2025	2030
Imperial	55	61	77	85	93	101	110
Los Angeles	4,453	4,504	5,027	5,180	5,321	5,445	5,557
Orange	1,515	1,581	1,793	1,834	1,870	1,898	1,922
Riverside	527	604	728	806	886	969	1,053
San Bernardino	595	669	771	843	918	994	1,071
Ventura	337	347	382	401	420	438	455
SCAG Region	**7,482**	**7,766**	**8,778**	**9,149**	**9,508**	**9,845**	**10,168**

Plan Alternatives

Alternatives Development
Preliminary analyses of Plan alternatives included three "Trend" projections and two additional called PILUT 1 and PILUT 2. Each alternative included:

- Transportation investments
- Transportation programs and policies
- Urban form strategies
- Resulting growth projection

All alternatives assumed the modified 2001 RTP set of projects plus with PILUT 1 and PILUT 2, further adjustments were made to target projects addressing the differing growth patterns and resulting congestion. The transportation assumptions for each alternative include: 1) 2002 RTIP projects are included; 2) additional Plan projects were added for each scenario, within funding constraints; and 3) system developed from adopted 2001 RTP projects and adjusted based on input from the county transportation commissions. Targeted projects for PILUT 1 and PILUT 2 alternatives are identified below.

PILUT 1
Projects focus on transit and the urban centers.
Highways
- o I-5 widening and interchanges
- o I-710 gap closure
- o SR-91 widening

Transit
- o •Rapid Bus/Bus Rapid Transit expansion
- o •Exposition Light Rail
- o •CenterLine Extension
- o •Redlands Rail Extension

PILUT 2
Projects focus on High Desert areas and access to/from urban centers.
Highways
- o I-15, SR-14 HOV and mixed-flow widening
- o SR-138, SR-18, US-395 improvements
- o Arterial widenings in High Desert

Transit
- o Enhanced Metrolink and express bus service to North LA County

The analyses resulted in key conclusions for development of a preferred Plan alternative:

1. PILUT 1 performs best for the region.
   - It makes better use of existing transportation infrastructure.
   - It encourages the use of alternative modes of transportation.
2. PILUT 1 and 2 perform better than the others by incorporating growth visioning and tailored projects: the transportation-land use link.

Therefore, taking the best elements of PILUT 1 and 2, a Growth Vision (Hybrid) alternative was created. This hybrid was primarily based on lessons learned from PILUT 1 and 2 and the multiple variations of alternatives analyzed. There were also the adjustments to the "No Project" as discussed above and input from the results of the Compass outreach project. This resulted in the final five alternatives evaluated for the RTP. They include:

- No Project
- 2001 RTP Modified
- PILUT 1 (Infill)
- PILUT 2 (5th Ring)
- Growth Vision (Hybrid)

Policy Direction

The 2004 RTP contains approximately $21 billion in highway and arterial improvement projects in addition to already committed or programmed projects. This figure includes all additional capital improvements proposed on the highway and arterial network, including mixed-flow lanes, HOV lanes, interchanges, truck climbing lanes, and grade crossings.

Major categories of the proposed improvements for highways and arterials in the 2004 RTP include HOV gap closures, HOV connectors, mixed-flow improvements, toll lanes and high-occupancy toll (HOT) lanes as well as strategic arterial improvements. The 2004 RTP is based on input from the 2001 RTP and priorities submitted by the county commissions and the subregions. The proposed projects and strategies are based on a performance framework established for the 2004 RTP and support the underlying Growth Vision developed through the consensus process. The Draft 2004 RTP contains a brief description of individual categories of improvements proposed with a full enumeration of projects in Appendix I.

Highway and Finance Task Force adopted a set of guiding principles in developing the highway improvement strategies. These principles are:

- ❖ Projects that enhance safety and security.
- ❖ Projects that fill significant gaps in the freeway and HOV system should be a priority, examples from the 2001 RTP include the 701 gap closure, 210 extension, I-10 HOV lane, 605 HOV lane.
- ❖ Projects that relieve significant bottlenecks, examples include truck climbing lanes, mixed flow widening and reconfigurations like the I-215 in San Bernardino, mixed flow continuity projects, completion of the HOV lanes on 405 through the Sepulveda Pass.
- ❖ Projects that support improved operational performance, examples include, auxillary lanes, interchange improvements such as better ramps.
- ❖ Projects that improve system connectivity.
- ❖ Projects that improve access to airports, cargo facilities, and intermodal centers.
- ❖ Projects that maximize efficient use of existing capacity, such as Traffic Management Centers, ramp metering, signal synchronization and other ITS.

- ❖ Projects to maintain and preserve the current investment in the highway system.
- ❖ Advancing long range study corridors from the 2001 RTP in high demand and/or high growth areas, based upon the findings of the RSTIS process.
- ❖ Projects that support land use through highway connectivity.

3. RTP System Improvements

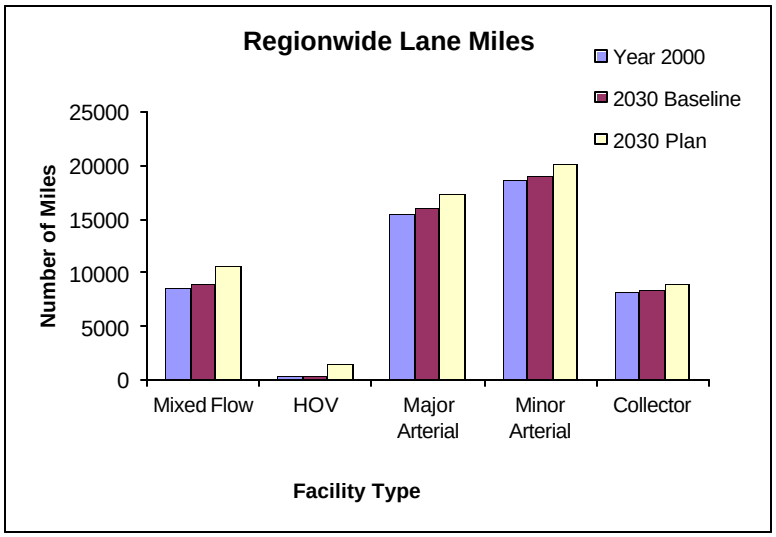
The Draft 2004 RTP proposes a significant increase in roadway lane miles as identified in Table D.1.7. HOV lane miles would increase by the greatest percentage at 51 percent, which is more than a tripling of the lane miles for HOV that existed in the year 2000. The largest increase occurs with mixed-flow freeway lane miles (1,556) which is also the facility type with the greatest percentage increase. This is followed closely by principal arterial lane miles (1,336) and then minor arterial lane miles (1,136).

Table D-1.7

Plan Improvements for Highway (Lane/Route Miles)			
Facility Types	***2030 Baseline***	**2030 Plan**	**Percent Increase**
Freeway	9,026	10,582	17%
Principal Arterial	15,959	17,345	9%
Minor Arterial	18,989	20,167	6%
Major Collectors	8,401	8,953	7%
HOV	931	1,403	51%
Freeway Connectors	457	480	5%

An easy comparison between existing year 2000 conditions and those future conditions with 2030 Baseline and the Plan can be seen in Figure D.1.7, Regionwide Lane Miles. Identified is the relative number of regionwide lane miles by facility type, along with the relative increase under future conditions. Clearly, the number of minor arterials lane miles is largest regardless of the scenario, but with a smaller increase from existing conditions.

Figure D-1.7



This same figure is replicated for each county in the SCAG region to identify where improvements would occur by facility type. These are indicated for counties of Los Angeles (Figure D-1.8), Orange (Figure D-1.9), Riverside (Figure D-1.10), San Bernardino (Figure D-1.11) and Ventura (Figure D-1.12).

Figure D-1.8

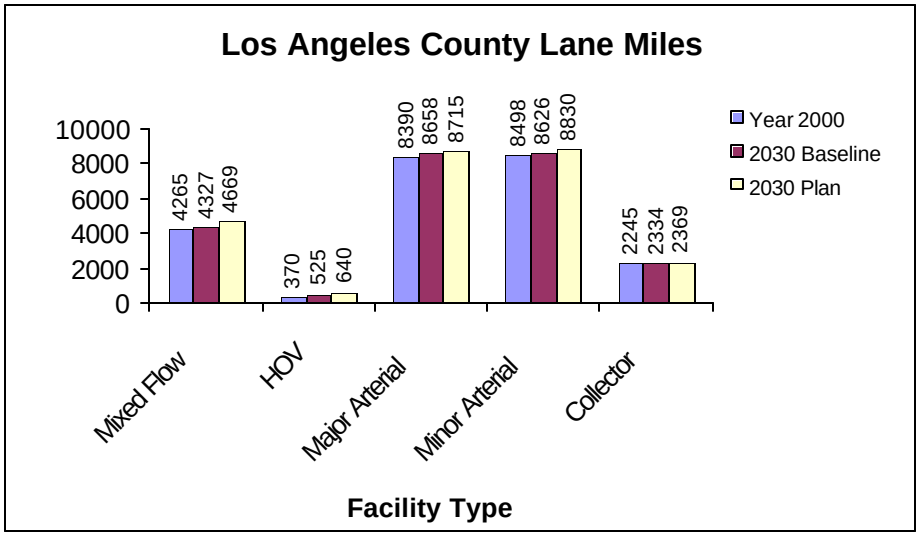


Figure D-1.9

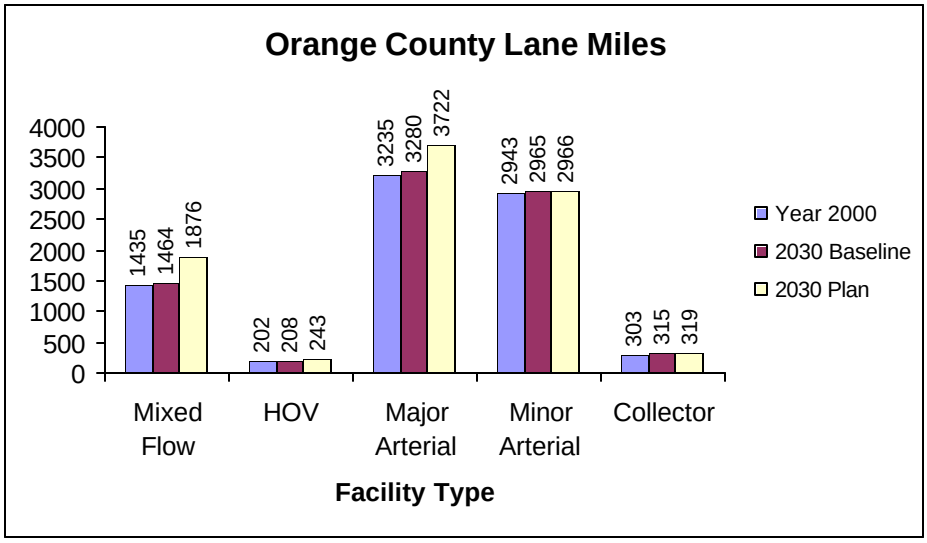


Figure D-1.10

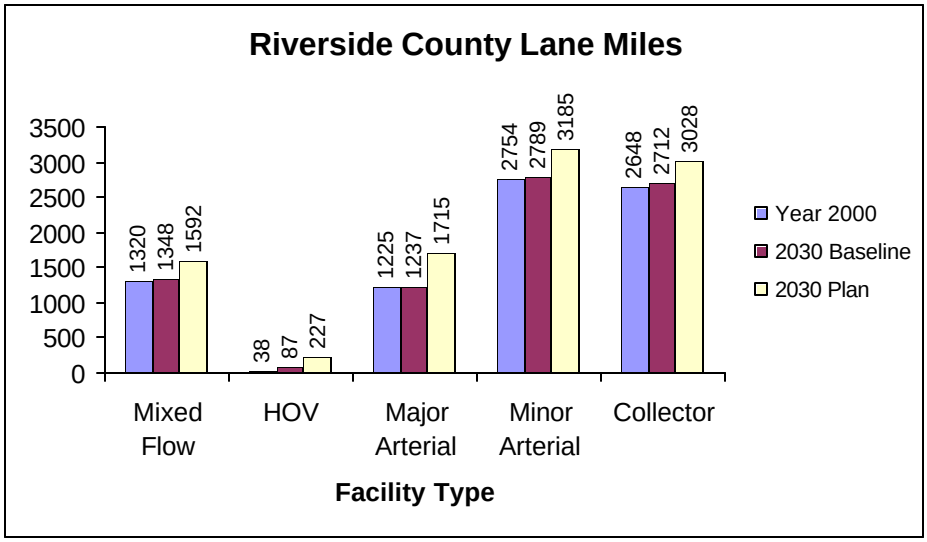


Figure D-1.11

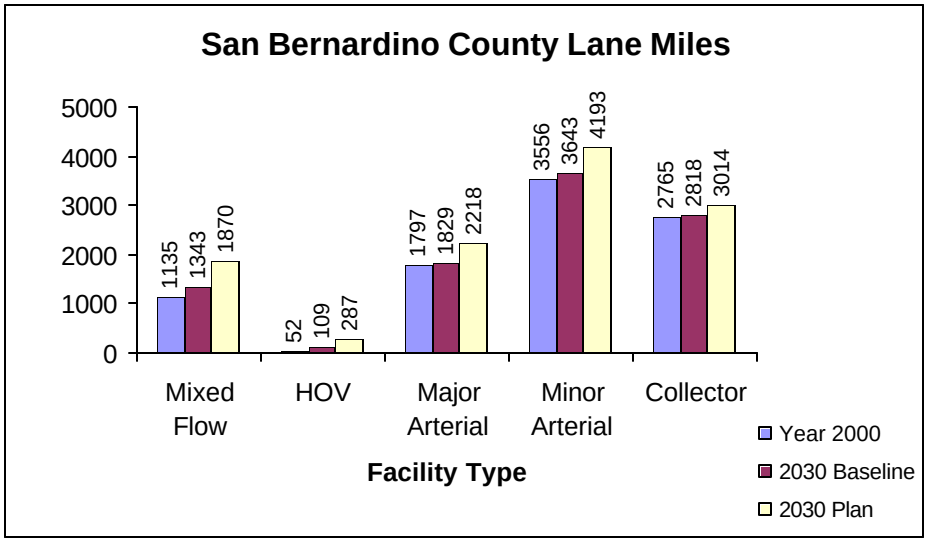
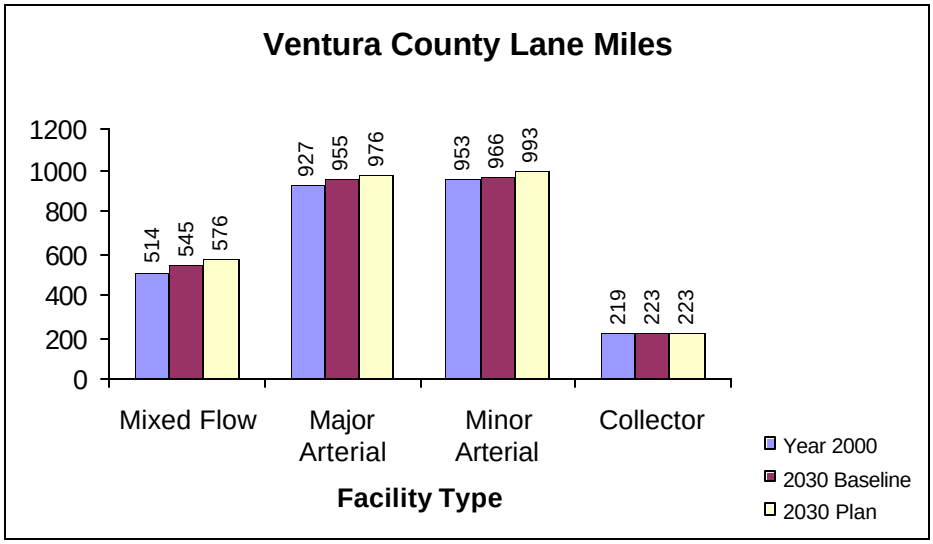


Figure D-1.12


Ventura County Lane Miles
1200
1000
800
600
400
200
0
514
545
576
927
955
976
953
966
993
219
223
223
Mixed Flow
Major Arterial
Minor Arterial
Collector
Facility Type
Year 2000
2030 Baseline
2030 Plan